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AUTHOR Halasz, Hisako, Comp.
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ABSTRACT

The environment we live in today is filled with human-created electromagnetic fields generated by a variety of sources, including radio and television transmitters, power lines, and visual display terminals. (In addition, there exists a natural background of electromagnetic fields.) The term "electromagnetic pollution" is often used to describe the recent proliferation of artificial sources of electromagnetic fields in our environment. This document was developed to help the interested reader locate materials in the collections of the Library of Congress on the biological and health effects of electromagnetic fields. Although it was intended to be a comprehensive bibliography, it is designed to provide the reader with a set of resources that can be used to focus on the topic. The document lists the subject headings used by the Library of Congress in cataloging information on electromagnetic radiation. It also contains citations of materials categorized as: (1) brief introductions; (2) basic texts; (3) additional titles; (4) handbooks and encyclopedias; (5) other bibliographies; (6) conference proceedings; (7) government publications; (8) abstracting and indexing services; (9) journal articles; (10) technical reports; and (11) additional sources of information. (TW)

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BIOLOGICAL AND HEALTH EFFECTS OF ELECTROMAGNETIC (NONIONIZING) RADIATION
Compiled by Hisako Halasz

TB 86-5

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SCOPE: The environment we live in today is filled with man-made electromagnetic fields generated by a variety of sources, including radio and TV transmitters, power lines, and visual display terminals. In addition to these artificially created electromagnetic fields, there also exists a natural background of electromagnetic fields.

Electromagnetic energy may vary greatly in frequency, i.e., ranging from low energy, ultra-low frequency to high energy cosmic rays. The higher energy portion of the electromagnetic spectrum is generally referred to as "ionizing radiation" and includes cosmic, gamma and x-rays. The lower portion of the spectrum is referred to as "non-ionizing radiation" and includes visible light, ultraviolet (slightly ionizing at the higher end) and infrared radiation, microwaves, radiowaves and lower frequencies. Because of its low energy levels, concern over the health effects of nonionizing radiation is not as widespread as it is for ionizing radiation.

The term "electromagnetic pollution" is often used to describe the recent proliferation of artificial sources of electromagnetic fields in our environment. Sources referred to by this term generally are exclusive of visible light, ultraviolet and infrared radiation. The electromagnetic spectrum covered by this guide follows the narrower definition above, namely, nonionizing electromagnetic fields from extremely low frequencies (ELF) to just below infrared.

While an extensive body of scientific and epidemiologic data has been accumulated, adverse biological and health effects of electromagnetic fields, thus defined, have not been conclusively demonstrated, with the exception of microwave thermal effects at higher intensities.

The following guide complements two previous guides, Low-Level Ionizing Radiation--Health Effects (TB 80-5) and Microwaves (TB 79-6) and is intended to help the interested reader locate materials in the collections of the Library of Congress on the biological and health effects of electromagnetic fields. Not meant to be a comprehensive bibliography, it is designed--as the name of the series implies--to put the reader "on target."

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INTRODUCTIONS

Lerner, Eric J. Biological effects of electromagnetic fields. IEEE spectrum, v. 21, May 1984: 57-69. TK1.I15 and Pamphlet box*

Morgan, M. Granger, and others. Power-line fields and human health. IEEE spectrum, v. 22, Feb. 1985: 62-68. TK1.I15 and Pamphlet box*

SUBJECT HEADINGS used by the Library of Congress, under which books on the biological and health effects of electromagnetic radiation can be located in most card, book, and online catalogs, include the following:

ELECTRIC FIELDS--PHYSIOLOGICAL EFFECT (Highly relevant)
 ELECTRIC LINES--OVERHEAD--HYGIENIC ASPECTS (Highly relevant)
 ELECTRIC POWER DISTRIBUTION--HIGH TENSION--HYGIENIC ASPECTS (Highly relevant)
 ELECTROMAGNETISM--HYGIENIC ASPECTS (Highly relevant)
 ELECTROMAGNETISM--PHYSIOLOGICAL EFFECT (Highly relevant)
 MAGNETIC FIELDS--PHYSIOLOGICAL EFFECT (Highly relevant)
 MICROWAVES--HYGIENIC ASPECTS (Highly relevant)
 MICROWAVES--PHYSIOLOGICAL EFFECT (Highly relevant)
 RADIO WAVES--HYGIENIC ASPECTS (Highly relevant)
 RADIO WAVES--PHYSIOLOGICAL EFFECT (Highly relevant)
 RADIATION--PHYSIOLOGICAL EFFECT (Relevant)
 RADIATION, BACKGROUND--PHYSIOLOGICAL EFFECT (Relevant)

See also names of individual instruments or devices which are capable of emitting electromagnetic radiation, when followed by subject subdivision "HYGIENIC ASPECTS" or "PHYSIOLOGICAL EFFECT," e.g.,
 VIDEO DISPLAY TERMINALS--HYGIENIC ASPECTS

GENERAL TEXTS

Becker, Robert O., and Andrew A. Marino. Electromagnetism and life. Albany, N.Y., State University of New York Press, c1982. 211 p. Includes bibliographical references. QP82.2.E43B42*

Brodeur, Paul. The zapping of America: microwaves, their deadly risk, and the coverup. New York, Norton, c1977. 343 p. RA569.3.B76
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DeMatteo, Bob. Terminal shock: the health hazards of video display terminals. Toronto, NC Press; Port Washington, N.Y., distributed in the U.S.A. by Independent Publishers Group, 1985. 224 p. RC965.V53D46 1985

Steneck, Nicholas H. The microwave debate. Cambridge, Mass., MIT Press, c1984. 279 p. RA569.3.S74 1984
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*Available in reference collection, Science Reading Room

ADDITIONAL TITLES

American national standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 kHz to 100 GHz. Co-secretariat, Institute of Electrical and Electronics Engineers and U.S. Department of the Navy (Naval Electronic Systems Command). New York, the Institute of Electrical and Electronics Engineers, c1982. 24 p. ANSI C95.1-1982***
Approved July 30, 1982, American National Standards Institute.

Biologic effects of environmental electromagnetism. Herbert L. Konig ... et al.; translation by Terry C. Telger. New York, Springer-Verlag, c1981. 332 p. QP82.2.E43B54
Bibliography: p. 296-323.

Biological effects of electromagnetic radiation. Edited by John M. Osepchuk; associate editors, James W. Frazer ... et al. New York, IEEE Press; sole worldwide distributor (exclusive of the IEEE), Wiley, c1983. 593 p. QP82.2.E43B554 1983*
"Prepared under the sponsorship of the IEEE Committee on Man and Radiation."
Includes bibliographies.

Extremely low frequency (ELF) fields. Published under the joint sponsorship of the United Nations Environment Programme, the World Health Organization, and the International Radiation Protection Association. Geneva, W.H.O.; Albany, N.Y., distributed by WHO Publications Centre USA, 1984. 131 p. (Environmental health criteria, 35) RA569.3.E98 1984
Includes bibliographies.

Michaelson, Sol M. Microwave and radiofrequency radiation. Copenhagen, Regional Office for Europe, World Health Organization, 1977. 98 p. QP82.2.M5M5
"ICP/CEP 803."
Bibliography: p. 70-96.

National Council on Radiation Protection and Measurements. Biological effects and exposure criteria for radiofrequency electromagnetic fields: recommendations of the National Council on Radiation Protection and Measurements. Bethesda, Md., The Council, c1986. 382 p. (NCRP report, no. 86) QP82.2.E43N38 1986
"Issued April 2, 1986."
Bibliography: p. 290-353.

Nonionizing radiation protection. Edited by Michael J. Suess. Supported by the United Nations Environment Programme. Copenhagen, World Health Organization, Regional Office for Europe; Albany, N.Y., distributed by WHO Publications Centre USA, 1982. 267 p. (WHO regional publications. European series, no. 10) QP82.2.R3N67 1982
Includes bibliographical references.

***Available in standards collection, Science Reading Room

Radiofrequency and microwaves. Geneva, World Health Organization; Albany, N.Y., distributed by WHO Publications Centre USA, 1981. 134 p. (Environmental health criteria, 16) RA569.3.R3 1981
 "Published under the joint sponsorship of the United Nations Environment Programme, the World Health Organization, and the International Radiation Protection Association."
 Bibliography: p. 106-121.

Study in the USSR of medical effects of electric fields on electric power systems. Translations from Russian by G. G. Knickerbocker. Presented as a public service by the Electrical Safety and Life Sciences Subcommittee of the Power and Environmental Sciences Committee of the IEEE Power Engineering Society. New York, Institute of Electrical and Electronics Engineers, c1975. 24 p. (Special publication of the IEEE Power Engineering Society, no. 10)

RC965.E4S78

HANDBOOK

CRC handbook of biological effects of electromagnetic fields. Editors, Charles Polk and Elliot Postow. Boca Raton, Fla., CRC Press, c1986. 503 p. QP82.2.E43C73 1986*
 Includes bibliographies.

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A Current literature report on the carcinogenic properties of ionizing and non-ionizing radiation. Cincinnati, U.S. Dept. of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, Division of Biomedical and Behavioral Science; for sale by the Supt. of Docs., U.S. Govt. Print. Off., 1977-1978. 3 v. (DHEW (NIOSH) publication, no. 78-122, 78-134, 78-142)

RC268.55.C86 and Pamphlet box (v. 2)*

See particularly "Microwave and radiofrequency radiation" in v. 2.

Heynick, Louise H., and John S. Krebs. USAFAM review and analysis of radiofrequency radiation bioeffects literature. Menlo Park, Calif., SRI International, Nov. 1981. 154 p. (SAM-TR-81-24) AD-A111 190**
 "Interim report for period 1 Mar. 1980-31 Aug. 1980."

Heynick, Louise H. USAFAM review and analysis of radiofrequency radiation bioeffects literature. Second report. Menlo Park, Calif., SRI International, May 1982. 150 p. (SAM-TR-82-16) AD-A116 139**
 "Final report for period Sept. 1980-30 June 1981."

**Available in microform collection, Science Reading Room

Index of publications on biological effects of electromagnetic radiation (0-100 GHz). Edited by James B. Kinn and Elliot Postow. Research Triangle, N.C., Health Effects Research Laboratory, U.S. Environmental Protection Agency, Mar. 1981. 575 p. PB81-181430**
"EPA-600/9-81-011."

Lockerby, Robert W. Biological effects of electromagnetic radiation. Monticello, Ill., Vance Bibliographies, 1981. 20 p. (Public administration series: bibliography, P-649) Z6663.E44L63 1981

Moore, Julie L. Cumulated index to the Bibliography of reported biological phenomena ('effects') and clinical manifestations attributed to microwave and radio-frequency radiation: report-supplements (no. 1-9), BEMS newsletter (B-1 through B-464), 1971-1981, compiled by Zorach R. Glaser. Indexed by Julie L. Moore. Riverside, Calif., J. Moore, 1984. 281 p. Z6663.M62M66 1984*

See Appendix 1, "Chronology of the Bibliography and Supplements," to determine AD numbers for the Bibliography and Supplements.

See Appendix 2, "Listing of Bibliographic Supplements on 'Bioeffects of RF/Microwave Radiation' which have appeared in the Bioelectromagnetics Society's Newsletter." Pamphlet box*

Reilly, J. Patrick. Human reactions to ELF electric and magnetic fields: an annotated bibliography of current literature. Laurel, Md., Johns Hopkins University, Applied Physics Laboratory, 1983. 88 p. QP82.2.E43R44 1983

"JHU PPSE T-27."

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"JHU PPSE T-30."

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REVIEWS and CONFERENCE PROCEEDINGS

Biological effects of nonionizing radiation. Karl H. Illinger, editor. Washington, American Chemical Society, 1981. 342 p. (ACS symposium series, 157) QP82.2.R3B527

"Based on a symposium sponsored by the Division of Physical Chemistry at the 179th meeting of the American Chemical Society, Houston, Texas, March 25-26, 1980."

Includes bibliographical references.

Electrical and biological effects of transmission lines: a review. Prepared by the Biological Studies Task Team, Jack M. Lee, Jr. ... et al. Portland, Ore., U.S. Dept. of Energy, Bonneville Power Administration, 1982. 93 p. QP82.2.E43E44 1982

Bibliography: p. 79-93.

"Second printing revised, Dec. 3, 1982."

Hanford Life Sciences Symposium, 18th, Richland, Wash., 1978. Biological effects of extremely low frequency electromagnetic fields: proceedings of the eighteenth annual Hanford Life Sciences Symposium at Richland, Washington, October 16-18, 1978. Sponsored by Office of Health and Environmental Research, U.S. Dept. of Energy and Pacific North-West Laboratories, Battelle Memorial Institute, in cooperation with Electric Power Research Institute. Editors, Richard D. Phillips ... et al. Oak Ridge, Tenn., Technical Information Center, U.S. Dept. of Energy, 1979. 577 p. (DOE symposium series, 50)
 "CONF-781016." QP82.2.E43H36 1978
 Includes bibliographies.

Interactions between electromagnetic fields and cells. Edited by A. Chiabrera, C. Nicolini and H. P. Schwan. New York, Published in cooperation with NATO Scientific Affairs Division by Plenum Press, c1985. 640 p. (NATO Advanced Study Institute series. Series A, Life sciences, v. 97) QH656.I57 1985
 "Proceedings of a NATO advanced research workshop entitled Interactions Between Electromagnetic Fields and Cells, held September 17-28, 1984 at the Ettore Majorana Centre for Scientific Culture in Erice, Sicily, Italy."
 Includes bibliographies.

International School of Radiation Damage and Protection, 5th, Erice, Sicily, 1983. Biological effects and dosimetry of static and ELF electromagnetic fields. Edited by Martino Grandolfo, Sol M. Michaelson, and Alessandro Rindi. New York, Plenum Press, c1985. 697 p. (Ettore Majorana international science series. Life sciences, v. 19) QP82.2.E43I58 1983
 "Proceedings of the fifth course of the International School of Radiation Damage and Protection of the Ettore Majorana Centre for Scientific Culture, held in November, 1983, in Erice, Sicily, Italy."
 Includes bibliographies.

NATO Advanced Study Institute on Advances in Biological Effects and Dosimetry of Low Energy Electromagnetic Fields, Erice, Sicily, 1981. Biological effects and dosimetry of nonionizing radiation: radio-frequency and microwave energies. Edited by Martino Grandolfo, Sol M. Michaelson, and Alessandro Rindi. New York, Published in cooperation with NATO Scientific Affairs Division by Plenum Press, c1983. 669 p. (NATO Advanced Study Institute series. Series A, Life sciences, v. 49) QP82.2.M5N37 1981
 "Proceedings of a NATO Advanced Study Institute on Advances in Biological Effects and Dosimetry of Low Energy Electromagnetic Fields which was also the fourth course of the International School of Radiation Damage and Protection of the Ettore Majorana Centre for Scientific Culture, held March 28-April 8, 1981, in Erice, Italy."
 Includes bibliographical references.

Proceedings of a workshop on radiofrequency radiation bioeffects, 11-13 September 1984. Sponsored by Defense Research Group, Panel VIII, NATO AC/243. Editor, John C. Mitchell. Brooks Air Force Base, Tex., USAF School of Aerospace Medicine, Aerospace Medical Division (AFSC), April 1985. 233 p. (ULAFSAM-TF-85-14) AD-A157 090**

"The workshop was held at the Research Establishment for Applied Science, Wachtberg-Werthoven, Federal Republic of Germany."

Symposium on Electromagnetic Fields in Biological Systems, Ottawa, Ont., 1978. Symposium on Electromagnetic Fields in Biological Systems: proceedings of a symposium held in Ottawa, Canada, June 27-30, 1978. Edited by Stanislaw S. Stuchly. Sponsored by the International Microwave Power Institute (IMPI) and the IEEE-Microwave Theory and Techniques Society, with the cooperation of the U.S. National Committee for the International Union of Radio Science and Canadian Commission A of URSI. Edmonton, Alta., International Microwave Power Institute, c1979. 323 p. QP82.2.E43S95 1978
Includes bibliographies.

In many cases, conference proceedings or abstracts are published in journals. They can be identified through the abstracting and indexing publications listed in the ABSTRACTING AND INDEXING SERVICES section of this guide or through more specialized indexes to conference proceedings, such as Conference Papers Index (Z7403.C84*) or Index to Scientific & Technical Proceedings (Z7403.I4*). Some examples of conference material published in journals are given below.

Papers from the Symposium on Health Aspects of Nonionizing Radiation appear in New York Academy of Medicine's Journal, v. 55, Dec. 1979, p. 973-1296. R15.N62

Papers from the Symposium on Mechanisms of Bioelectrical Growth and Repair appear in the Journal of Bioelectricity, v. 3, no. 1/2, 1984, p. 3-101. QP341.J66

Translated abstracts of papers from the All-Union Symposium on the Biological Effects of Electromagnetic Fields, held in Pushchino, U.S.S.R., in 1982, can be found in Biological Effects of Non-ionizing Electromagnetic Radiation, v. 9, Dec. 1984, p. 1-73.

Pamphlet box*

Proceedings of the First International Meeting of the Association for the Biomedical Applications of Electromagnetism on Biological Effects and Therapeutic Applications of Electromagnetic Fields, held in Venice, Feb. 23-25, 1985, are included in Bioelectrochemistry and Bioenergetics, v. 14, Nov. 1985, p. 3-244. QP341.B53

GOVERNMENT PUBLICATIONS

Biological effects of radiofrequency radiation. Edited by Joe A. Elder and Daniel F. Cahil. Research Triangle Park, N.C., Health Effects Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, 1984. 268 p.

Pamphlet box* and PB85-120848**

Hankin, Norbert N. The radiofrequency radiation environment: environmental exposure levels and RF radiation emitting sources. Washington, Office of Radiation Programs, Office of Air and Radiation, U.S. Environmental Protection Agency, July 1986. 83 p. Pamphlet box*
Bibliography: p. 76-83.
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United States. Congress. House. Committee on Science and Technology. Subcommittee on Natural Resources and Environment. Research on health effects of nonionizing radiation: hearing ... Ninety-sixth Congress, first session, July 12, 1979. Washington, U.S. Govt. Print. Off., 1979. 457 p. KF27.S398 1979g
"No. 70."
Includes bibliographical references.

United States. Congress. House. Committee on Science and Technology. Subcommittee on Investigations and Oversight. Potential health effects of video display terminals and radio frequency heaters and sealers: hearings ... Ninety-seventh Congress, first session, May 12, 13, 1981. Washington, U.S. Govt. Print. Off., 1981. 764 p. KF27.S3975 1981c
"No. 13."
Bibliography: p. 682-686.

United States. Congress. Senate. Committee on Commerce, Science, and Transportation. Microwave irradiation of the U.S. Embassy in Moscow: review of its history and studies to determine whether or not related health defects were experienced by employees assigned in the period, 1953-1977. Prepared at the request of Howard W. Cannon, chairman, Committee on Commerce, Science, and Transportation, United States Senate. Washington, U.S. Govt. Print. Off., 1979. 26 p. JX1706.A58R88
"At head of title: 96th Congress, 1st session. Committee print."

ABSTRACTING AND INDEXING SERVICES that index relevant journal articles and other literature are listed below. Some terms are suggested as aids in searching.

Abstracts on Health Effects of Environmental Pollutants (1972-)
RA565.A1A26*

See: Keyword of interest, e.g., Electromagnetic (Field(s), Frequency, etc.), Microwave (Exposure, Radiation, etc.)

Applied Science & Technology Index (1913-) Z7913.I7*

See: Electromagnetic Fields--Physiological Effect
Microwaves--Physiological Effect
Radio Waves--Physiological Effect

Biological Abstracts (1926-) QH301.B37* and Biological Abstracts/RRM (1967-) Z53211.B672*

See: Keyword of interest, e.g. Electromagnetic (Field(s) Exposure, Radiation, etc.), Extremely-Low-Frequency, ELF, Nonionizing Radiation, Radiofrequency (Exposure, Radiation, etc.), RF

Biological & Agricultural Index (1916-) Z5073.A46*

See: Electromagnetic Waves--Biological Effect
Microwaves--Biological Effect

Environmental Periodicals Bibliography (1972-) Z5863.E57E58*

See: Headings beginning Electromagnetic; Microwave; Radiation,
Nonionizing; Radiofrequency

Index Medicus (1960-) Z6660.I422*

See: Electromagnetics
Microwaves
Radiation, Non-ionizing
Radio Waves

INIS Atomindex (1969-) Z7144.N8I18*

See: Electromagnetic Radiation--Biological Radiation Effects
Electromagnetic Radiation--Dose Limits
Electromagnetic Radiation--Radiation Protection
Long Wave Radiation
Microwave Radiation--Biological Effects
Microwave Radiation--Biological Radiation Effects
Microwave Radiation--Prenatal Irradiation
Microwave Radiation--Pulsed Irradiation
Microwave Radiation--Radiation Protection

Magazine Index (1980-) uncataloged

See: Electromagnetic Fields
Electromagnetic Waves--Environmental Aspects
Electromagnetic Waves--Medical Use
Electromagnetic Waves--Physiological Aspects
Microwaves--Environmental Aspects
Microwaves--Medical Use
Microwaves--Physiological Aspects
Radio Waves

Readers' Guide to Periodical Literature (1900-) AI3.R45

See: Electromagnetic Fields--Physiological Effects
Electromagnetic Therapy
Electromagnetic Waves--Physiological Effects
Microwaves--Physiological Effects

JOURNALS that often contain articles on physiological and health effects of electromagnetic radiation are

Bioelectromagnetics QP82.2.E43B53

Bioelectrochemistry and Bioenergetics QP341.B53

Journal of Bioelectricity QP341.J66

Microwave News (current issues only in LM133)

USSR Report. Life Sciences. Effects of Nonionizing Electromagnetic Radiation (JPRS) (available in LM133 and LJ140A)

VDT News (review before binding in LM133)

REPRESENTATIVE JOURNAL ARTICLES

- Adey, W. R. Tissue interactions with nonionizing electromagnetic fields. *Physiological review*, v. 61, Apr. 1981: 435-514. QP1.P45
References (468): p. 501-514.
- Bauchinger, M., and others. Analysis of structural chromosome changes and SCE after occupational long-term exposure to electric and magnetic fields from 380 kV-systems. *Radiation and environmental biophysics*, v. 19, no. 4, 1981: 235-238. QH505.A1B57
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- Delgado, Jose M. R., and others. Embryological changes induced by extremely low frequency electromagnetic fields. *Journal of anatomy*, v. 134, May 1982: 533-551. QL801.J7
References (49): p. 550-551.
- Justesen, Don R. Behavioral and psychological effects of microwave radiation. In *New York Academy of Medicine. Bulletin*, v. 55, Dec. 1979: 1058-1078. R15.N62
References (40): p. 1077-1078.
- Lerner, Eric J. The drive to regulate electromagnetic fields. *IEEE spectrum*, v. 21, Mar. 1984: 63-70. TK1.I15 and Pamphlet box*
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- Wertheimer, Nancy, and Ed Leeper. Possible effects of electric blankets and heated waterbeds on fetal development. *Bioelectromagnetics*, v. 7, no. 1, 1986: 13-22. QP82.2.E43B53

REPORTS and other types of literature are indexed in the following guides:

Government Reports Announcements & Index (1946-) Z7916.G78*

See: Electromagnetic Fields
Microwaves
Radiation Protection
Radiofrequency

Monthly Catalog of United States Government Publications (1895-)

Z1223.A18*

See: Electromagnetism--Physiological Effect
Microwaves--Physiological Effect
Microwaves--Psychological Aspects
Radiation--Physiological Effect

SELECTED TECHNICAL REPORTS, sold by the National Technical Information Service, Springfield, Virginia 22161, include the following:

- Assessments and viewpoints on the biological and human health effects of extremely low frequency (ELF) electromagnetic fields. Arlington, Va., American Institute of Biological Sciences, May 1985. 461 p.
AD-A156 942**
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- Biological and human health effects of extremely low frequency electromagnetic fields: post-1977 literature review. Arlington, Va., American Institute of Biological Sciences, Mar. 1985. 327 p.
AD-A152 731**
- Blackman, Carl F. Biological influences of low-frequency sinusoidal electromagnetic signals alone and superimposed on RF carrier waves. Research Triangle Park, N.C., Health Effects Research Laboratory, U.S. Environmental Protection Agency, Jan. 1985. 15 p.
(EPA/600/D-85-010) PB85-161248**
- Meltz, Martin L., and Kathleen A. Walker. Genetic effects of microwave exposure on mammalian cells in vitro: volume 1. San Antonio, Tex., University of Texas Health Science Center, June 1984. 39 p.
(USAFSAM-TR-84-22) AD-A145 946**
- Meltz, Martin L., Clifton R. Harris, and Kathleen A. Walker. Genetic effects of microwave exposure on mammalian cells in vitro: volume 2. San Antonio, Tex., University of Texas Health Science Center, Oct. 1984. 88 p. (USAFSAM-TR-84-24) AD-A149 347**
- O'Connor, Mary Ellen, and Robert Strattan. Teratogenic effects of microwave radiation. Tulsa, Okla., Departments of Psychology and Electrical Engineering, University of Tulsa, May 1985. 42 p.
(EPA/600/1-85/007) PB85-207462**
- Raines, Jeremy K. Electromagnetic field interaction with the human body: observed facts and theories. Greenbelt, Md., Goddard Space Flight Center, National Aeronautics and Space Administration, Apr. 1981. 123 p. (NASA-CR-166361) N81-25668**

SELECTED MATERIALS available in the Science Reading Room pamphlet boxes include:

- Bibliography of reported biological phenomena ('effects') and clinical manifestations attributed to microwave and radio-frequency radiation. Compiled by Zorach R. Glaser. Bethesda, Md., Naval Medical Research Institute, National Naval Medical Center, 1971. 92 p.

Dodge, Christopher H. Video display terminals: the controversy about health and safety issues. Washington, Congressional Research Service, Library of Congress, 1984 (updated Jan. 30, 1985). 20 p.

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The health hazards of computers: a guide to worrying intelligently. Whole earth review, no. 48, fall 1985: 80-93.

Lerner, Eric J. The drive to regulate electromagnetic fields. IEEE spectrum, v. 21, Mar. 1984: 63-70.

McAuliffe, Kathleen. The mind fields. Omni, v. 7, Feb. 1985: 41-42, 44, 96, 98, 100-104.

Miller, Morton W, and Gary E. Kaufman. High voltage overhead. Environment, v. 20, Jan./Feb. 1978: 6-15, 32-36.

Morgan, Granger M. Risk research: when should we say "enough"? Science, v. 232, May 23, 1986: 917.

Nichols, Christina. Power towers: are high-voltage lines dangerous? Environmental action, v. 17, May/June 1986: 26-27.

ADDITIONAL SOURCES OF INFORMATION

Center for Devices and Radiological Health
U.S. Food and Drug Administration
5600 Fishers Lane
Rockville, Maryland 20857
Telephone: (301) 443-4690

National Council on Radiation Protection and Measurements (NCRP)
7910 Woodmont Ave., Suite 1016
Bethesda, Maryland 20814
Telephone: (301) 657-2652

Office of Radiation Programs
Office of Air and Radiation
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 475-9605

Office of Spectrum Management
National Telecommunications and Information Administration
14th Street and Constitution Avenue, N.W.
Washington, D.C. 20230
Telephone: (202) 377-1850